

4 second semiconductor structure.

1 33. (Original) The method of claim 32 further comprising:

2 bonding the first surface of the second semiconductor structure to the first surface of
3 the semiconductor -handle complex.

1 34. (Original) The method of claim 33 further comprising:

2 removing the handle member and the laminate layer.

1 35. (Original) The method of claim 28 wherein providing a first semiconductor structure
2 having first and second opposing surfaces comprises:

3 a substrate having first and second opposing surfaces; and

4 a first semiconductor structure over a first one of the first and second surfaces of the
5 substrate.

1 36. Cancelled.

1 37. Cancelled.

1 38. Cancelled.

1 39. Cancelled.

1 40. (Original) The method of claim 29 wherein disposing a handle member over the laminate
2 layer comprises disposing a handle member over the laminate layer such that a surface of the
3 laminate adheres to a surface of the handle member.

1 41. (Original) The method of claim 29 wherein disposing the laminate layer over a first one of
2 the first and second opposing surfaces of the first semiconductor structure to provide a
3 semiconductor structure having a laminate layer disposed thereon comprises providing a

4 laminate layer comprised of a plurality of layers.

1 42. (Original) The method of claim 41 wherein providing a laminate layer comprised of a
2 plurality of layers comprises:

3 providing a first layer corresponding to a release layer;

4 providing a second layer corresponding to a metal adhesion / diffusion barrier layer;

5 and

6 providing a third layer corresponding to a fusion layer.

1 43. (Original) The method of claim 42 wherein the release layer comprises at least one of
2 zirconium and aluminum.

1 44. (Original) The method of claim 42 wherein the metal adhesion / diffusion barrier layer
2 comprises tantalum.

1 45. (Original) The method of claim 42 wherein the fusion layer comprises at least one of
2 copper; a polymer; and an inorganic dielectric.

1 46. (Original) The method of claim 41 wherein providing a laminate layer comprised of a
2 plurality of layers comprises:

3 providing a first layer corresponding to a metal adhesion / diffusion barrier layer;

4 providing a second layer corresponding to a release layer; and

5 providing a third layer corresponding to a fusion layer.

1 47. (Original) The method of claim 46 wherein the release layer comprises at least one of
2 zirconium and aluminum.

1 48. (Original) The method of claim 46 wherein the metal adhesion / diffusion barrier layer
2 comprises tantalum.

1 49. (Original) The method of claim 46 wherein the fusion layer comprises at least one of
2 copper; a polymer; and an inorganic dielectric.

1 50. Cancelled.

1 51. Cancelled.

1 52. Cancelled.

1 53. (Original) The method of claim 31, wherein removing the substrate from the second one of
2 the first and second opposing surfaces of the semiconductor structure to provide a
3 semiconductor-handle complex comprises removing a portion of the second surface of the
4 semiconductor-handle complex using at least one of: a mechanical grindback, an aqueous
5 chemical etch; a vapor chemical etch; and a plasma etch.

1 54. (Original) The method of claim 33, wherein bonding the first surface of the second
2 semiconductor structure to the first surface of the semiconductor-handle complex comprises
3 providing bonding pads on at least one of the first surface of the second semiconductor
4 structure; and the first surface of the semiconductor-handle complex.

1 55. (Original) The method of claim 54, wherein the bonding pads are provided from at least
2 one of: copper; a polymer; and an inorganic dielectric.

1 56. (Original) The method of claim 34 wherein removing the handle member and the laminate
2 layer comprises using at least one of:

- 3 an aqueous-activated method;
- 4 a vapor-activated method;
- 5 a light-activated method;
- 6 a temperature-activated method;
- 7 an ion bombardment-activated method;

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

Claims 1-27, 64 and 65 have been previously cancelled.

Claims 28, 36-39, 50-52, 57, 59, 81 – 83 and 88 are cancelled by this amendment.

1 28. Cancelled.

1 29. (Currently Amended) A~~The method of claim 28 further providing a multi-layer~~
2 semiconductor structure, the method comprising:
3 providing a first semiconductor structure having first and second opposing surfaces; and
4 disposing a laminate layer over a first one of the first and second opposing surfaces of
5 the first semiconductor structure to provide a first semiconductor structure having a laminate
6 layer disposed thereon;
7 disposing a handle member over the laminate layer.

1 30. (Currently Amended) The method of claim 29 further comprising:
2 a substrate ~~and disposed over~~ a second one of the first and second opposing surfaces of
3 the first semiconductor structure.

1 31. (Original) The method of claim 30 further comprising:
2 removing at least a portion of the substrate from the second one of the first and second
3 opposing surfaces of the first semiconductor structure to provide a semiconductor-handle
4 complex.

1 32. (Currently Amended) The method of claim 31 further comprising:
2 providing a second semiconductor structure); and
3 aligning a first surface of the semiconductor-handle complex with a first surface of the

8 an electrically-assisted method; and
9 a mechanical method.

1 57. Cancelled.

1 58. (Previously Amended) The method of claim 29 wherein the semiconductor structure
2 corresponds to a die-to-wafer semiconductor structure.

1 59. Cancelled.

1 60. (Previously Presented) The method of claim 29 wherein:
2 providing a first semiconductor structure having first and second opposing
1 surfaces comprises providing a first semiconductor structure having a face surface and a
2 backside surface; and
3 disposing a laminate layer comprises disposing a laminate layer over the face of the first
4 semiconductor structure to provide a semiconductor structure having a laminate layer disposed
5 thereon.

1 61. (Previously Presented) The method of claim 32 wherein:
2 providing a second semiconductor structure comprises providing a second
3 semiconductor structure; and
4 aligning a first surface of the semiconductor-handle complex with a first surface of the
5 second semiconductor structure comprises aligning the backside of the semiconductor-handle
6 complex with a face of the second semiconductor structure.

1 62. (Previously Presented) The method of claim 29 wherein:
2 the first semiconductor structure corresponds to an original semiconductor substrate;
3 the first semiconductor-handle complex having a substrate portion corresponds to an
4 original-handle complex having a substrate portion; and
5 the second semiconductor structure corresponds to a second substrate.

1 63. (Previously Presented) The method of claim 62 wherein:
2 the original semiconductor substrate corresponds to a first substrate and the second
3 substrate corresponds to a second substrate.

1 64. Cancelled.

1 65. Cancelled.

1 66. (Previously Presented) A multi-layer semiconductor structure comprising:
2 a first semiconductor structure having first and second opposing surfaces; and
3 a laminate layer over one of the first and second opposing surfaces of the first
4 semiconductor structure to provide a first semiconductor structure having a laminate layer
5 disposed thereon.

1 67. (Previously Presented) The structure of claim 66 further comprising a handle member
2 disposed over the laminate layer.

1 68. (Previously Presented) The structure of claim 66 further comprising a substrate disposed
2 on a second one of the first and second opposing surfaces of the first semiconductor structure.

1 69. (Previously Presented) The structure of claim 66 wherein the first semiconductor
2 structure comprises a plurality of thin film semiconductor layers.

1 70. (Previously Presented) The structure of claim 67 further comprising a film layer disposed
2 over at least one surface of the handle member.

1 71. (Previously Presented) The structure of claim 70 wherein the film layer is provided from
2 one of: silicon nitride; and silicon dioxide.

1 72. (Previously Presented) The structure of claim 67 further comprising a laminate disposed
2 over a surface of the handle member.

1 73. (Previously Presented) The structure of claim 66 wherein said laminate layer comprises:
2 a first layer corresponding to a release layer;
3 a second layer corresponding to a metal adhesion / diffusion barrier layer; and
4 a third layer corresponding to a fusion layer.

1 74. (Previously Presented) The structure of claim 73 wherein the release layer comprises at
2 least one of zirconium and aluminum.

1 75. (Previously Presented) The structure of claim 74 wherein the metal adhesion / diffusion
2 barrier layer comprises tantalum.

1 76. (Previously Presented) The structure of claim 75 wherein the fusion layer comprises at
2 least one of copper; a polymer; and an inorganic dielectric.

1 77. (Previously Presented) The structure of claim 66 wherein said laminate layer comprises:
2 a first layer corresponding to a metal adhesion / diffusion barrier layer;
3 a second layer corresponding to a release layer; and
4 a third layer corresponding to a fusion layer.

1 78. (Previously Presented) The structure of claim 77 wherein the release layer comprises at
2 least one of zirconium and aluminum.

1 79. (Previously Presented) The structure of claim 78 wherein the metal adhesion / diffusion
2 barrier layer comprises tantalum.

1 80. (Previously Presented) The structure of claim 79 wherein the fusion layer comprises at
2 least one of copper; a polymer; and an inorganic dielectric.

1 81. Cancelled.

1 82. Cancelled.

1 83. Cancelled.

1 84. (Previously Presented) The structure of claim 66 wherein the semiconductor structure
2 corresponds to a die-to-wafer semiconductor structure.

1 85. Cancelled.

1 86. (Previously Presented) The structure of claim 67 wherein a portion of the substrate from
2 the second one of the first and second opposing surfaces of the first semiconductor structure and
3 the handle member provide a semiconductor-handle complex and wherein the structure further
4 comprises:
5 a second semiconductor structure corresponding to a second semiconductor structure
6 disposed over a first surface of the semiconductor-handle complex with a first surface of the
7 second semiconductor structure aligned with a backside of the semiconductor-handle complex.

1 87. (Previously Presented) The structure of claim 86 wherein:
2 the first semiconductor structure corresponds to an original semiconductor substrate;
3 the first semiconductor-handle complex having a substrate portion corresponds to an
4 original-handle complex having a substrate portion;
5 and
6 the second semiconductor structure corresponds to a second substrate.

1 88. Cancelled.